

WHAT IS CLAIMED IS:

1. An X-ray computed tomography apparatus
comprising:

5 a scan unit configured to scan an imaging target
region of a subject to be examined with X-rays in
accordance with a scan condition;

a reconstruction unit configured to reconstruct
image data on the basis of projection data acquired by
the scan;

10 a scan condition setting unit configured to set
the scan condition;

a picture quality index calculating unit
configured to calculate a value associated with an
index of picture quality on the basis of the set scan
15 condition;

a sample image storage unit configured to store
sample image data corresponding to a reference value
associated with the index of picture quality;

20 a simulation image generating unit configured to
generate simulation image data corresponding to the
calculated value associated with the index of picture
quality from the sample image data on the basis of the
calculated value associated with the index of picture
quality and the reference value associated with the
25 index of picture quality; and

a display unit configured to display the generated
simulation image data.

2. An apparatus according to claim 1, wherein
the storage unit stores data associated with a
plurality of sample images corresponding to a plurality
of reference values, and

5 the simulation image generating unit generates the
simulation image data by weighting and adding data
associated with the plurality of sample images on the
basis of the plurality of reference values and
calculated values associated with the index of picture
10 quality.

3. An apparatus according to claim 1, wherein
the storage unit stores data associated with a
plurality of sample images corresponding to a plurality
of regions, and

15 the simulation image generating unit generates the
simulation image data from sample image data
corresponding to an imaging target region of the
subject.

4. An apparatus according to claim 1, wherein the
20 scan condition includes an image slice thickness, a
tube voltage, a tube current, a reconstruction
function, and a beam pitch.

5. An apparatus according to claim 4, wherein the
picture quality index calculating unit calculates a
25 value associated with the index of picture quality on
the basis of at least one of the image slice thickness,
the tube voltage, the tube current, the reconstruction

function and the beam pitch, and a water equivalent thickness associated with an imaging target region of the subject.

5 6. An apparatus according to claim 5, further comprising a water equivalent thickness calculating unit configured to calculate the water equivalent thickness on the basis of a body thickness of an imaging target region of the subject.

10 7. An apparatus according to claim 5, further comprising a water equivalent thickness calculating unit configured to calculate the water equivalent thickness on the basis of scanogram data associated with the subject.

15 8. An apparatus according to claim 1, further comprising a scan condition storage unit configured to store a plurality of scan conditions corresponding to a plurality of values associated with the index of picture quality, and a scan condition specifying unit configured to specify a scan condition corresponding to
20 a desired value associated with the index of picture quality.

9. An X-ray computed tomography apparatus comprising:

25 a scan unit configured to scan an imaging target region of a subject to be examined with X-rays;

 a reconstruction unit configured to reconstruct image data on the basis of projection data acquired by

the scan;

an input unit configured to input a value or dose associated with an index of picture quality;

5 a simulation image generating unit configured to generate simulation image data corresponding to the input value or dose associated with the index of picture quality; and

a display unit configured to display the generated simulation image data.

10 10. An apparatus according to claim 9, wherein the input unit includes a slider button to input the value or dose associated with the index of picture quality.

15 11. An apparatus according to claim 9, wherein the simulation image generating unit generates the simulation image by weighting and adding a plurality of sample images corresponding to a plurality of reference values associated with the index of picture quality on the basis of the plurality of reference values and a calculated value associated with the index of picture
20 quality.

12. An apparatus according to claim 9, wherein the simulation image generating unit generates the simulation image from a plurality of sample images corresponding to the input values or does associated
25 with index of picture quality.

13. An apparatus according to claim 9, further comprising a scan condition recommended value

determining unit configured to determine a recommended value of a scan condition corresponding to the input value or dose associated with the index of picture quality.

5 14. A picture quality simulation apparatus comprising:

 a scan condition input unit configured to input a scan condition associated with scanning by an X-ray computed tomography apparatus;

10 a picture quality index calculating unit configured to calculate an index of picture quality on the basis of the input scan condition;

 a sample image storage unit configured to store sample image data corresponding to a reference value associated with the index of picture quality;

15 a simulation image generating unit configured to generate simulation image data corresponding to the calculated value associated with the index of picture quality from the sample image data on the basis of the calculated value associated with the index of picture quality and a reference value associated with the index of picture quality; and

20 a display unit configured to display the generated simulation image data.

25 15. A picture quality simulation apparatus comprising:

 an input unit configured to input a value or dose

associated with an index of picture quality of an X-ray
computed tomography apparatus;

5 a simulation image generating unit configured to
generate simulation image data corresponding to the
input value or dose associated with the index of
picture quality; and

a display unit configured to display the generated
simulation image data.

10 16. A computer program product configured to store
program instructions for execution on a computer system
enabling the computer system to perform:

inputting a scan condition associated with an
X-ray computed tomography apparatus,

15 calculating a value associated with an index of
picture quality on the basis of the input scan
condition;

storing sample image data corresponding to a
reference value associated with the index of picture
quality,

20 generating simulation image data corresponding to
the calculated value associated with the index of
picture quality from the sample image data on the basis
of the calculated value associated with the index of
picture quality and a reference value associated with
25 the index of picture quality, and

displaying the generated simulation image data.

17. A computer program product configured to store

program instructions for execution on a computer system enabling the computer system to perform:

inputting a value or dose associated with an index of picture quality of an X-ray computed tomography apparatus,

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generating simulation image data corresponding to the input value or dose associated with index of picture quality, and

displaying the generated simulation image data.